

Fig. 2

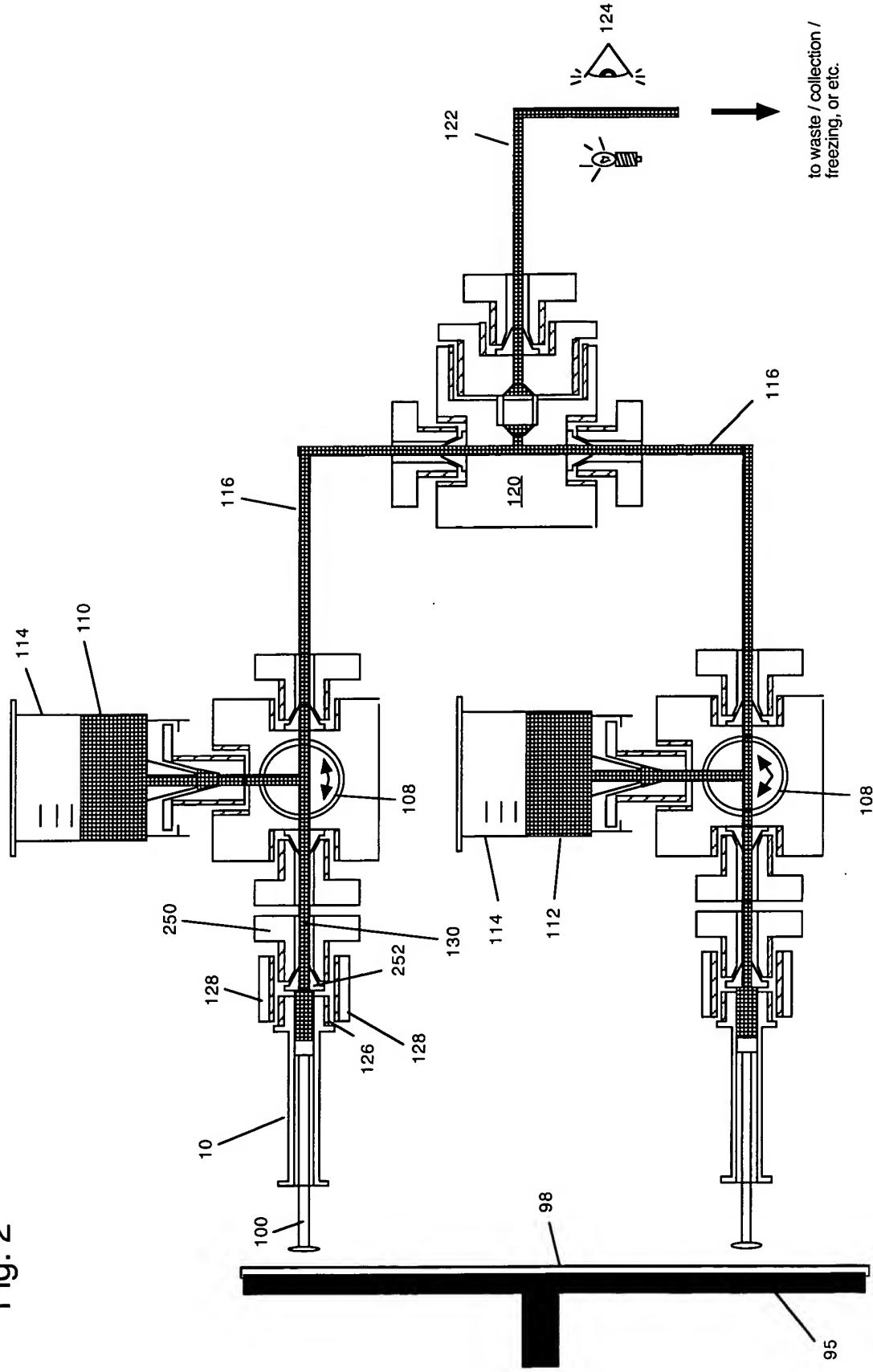


FIG. 3 is a cross-sectional view of the assembly. It shows a central core 10 with a central hole 103. The core is surrounded by layers 102 and 106. The assembly is held together by bolts 105 with washers 104. A flange 107 is visible on the right side. A circular feature 40 is shown on the bottom layer 102.

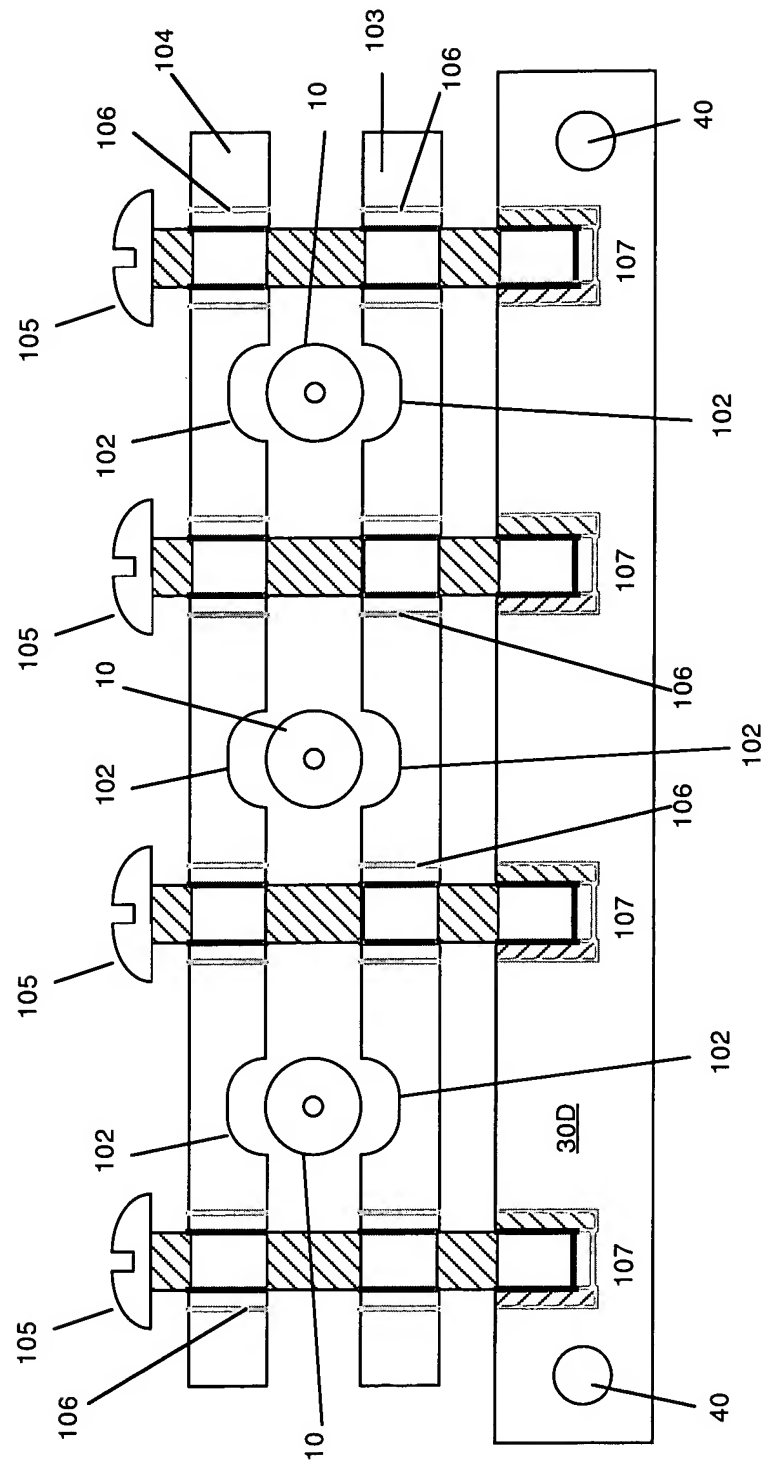


Fig. 4A

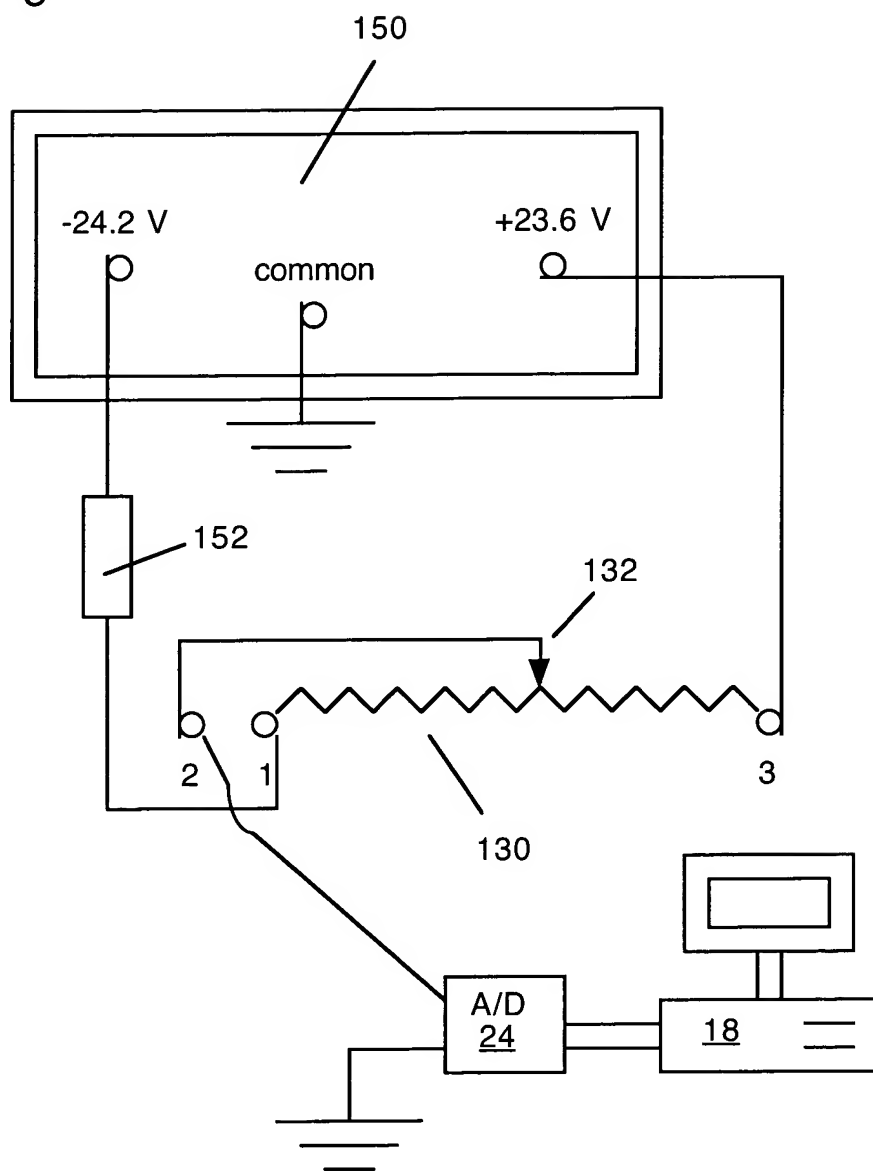


Fig. 4B

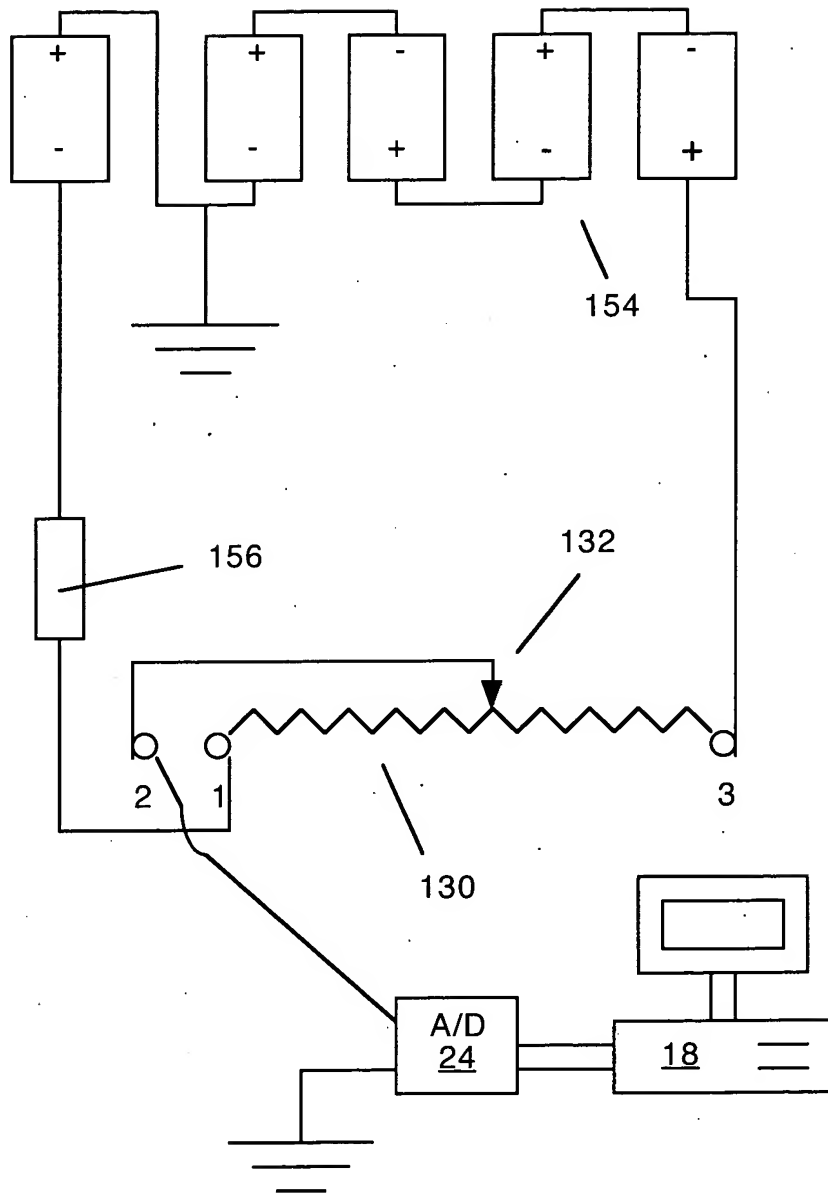


Fig. 5

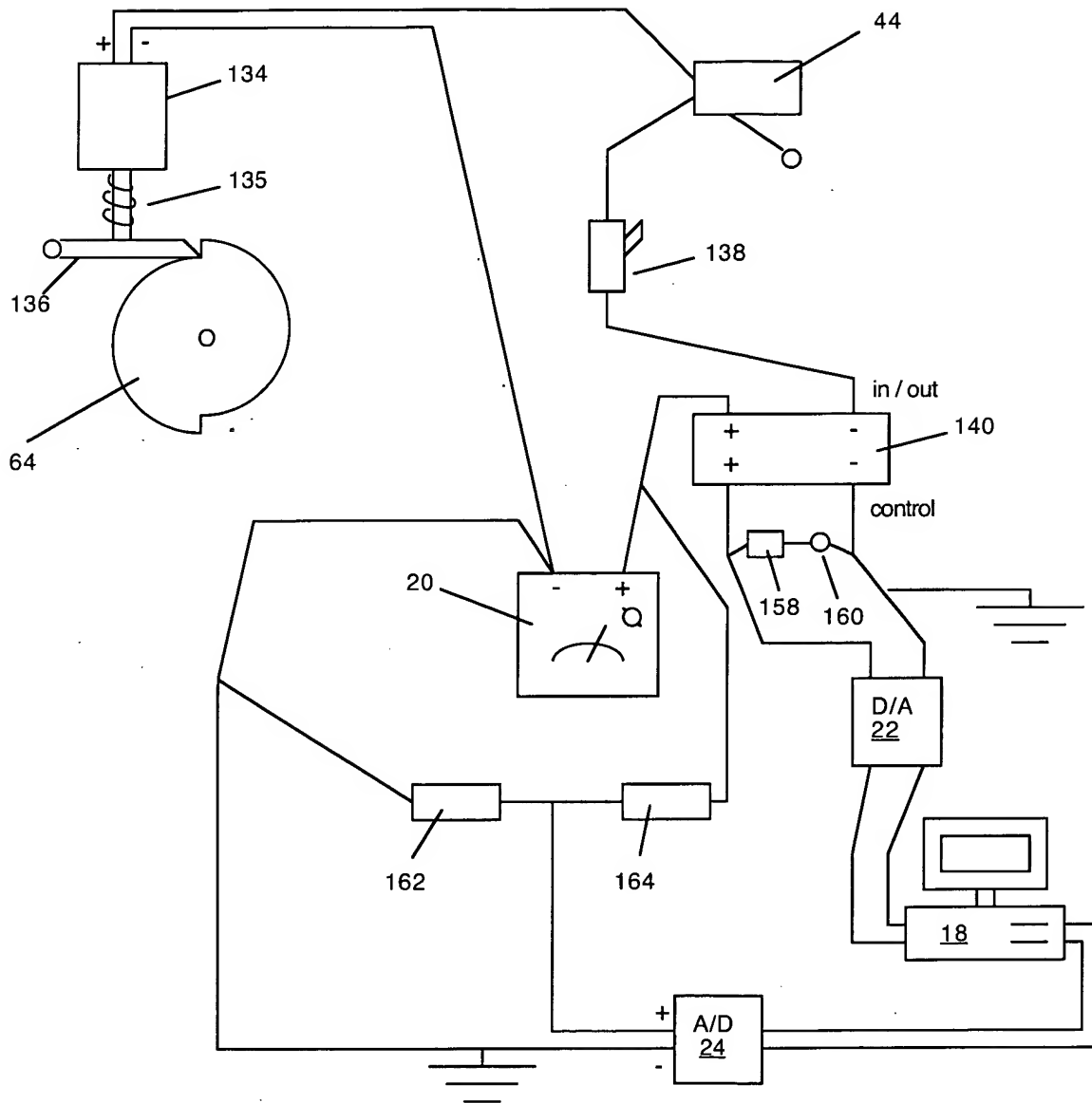


Fig. 6

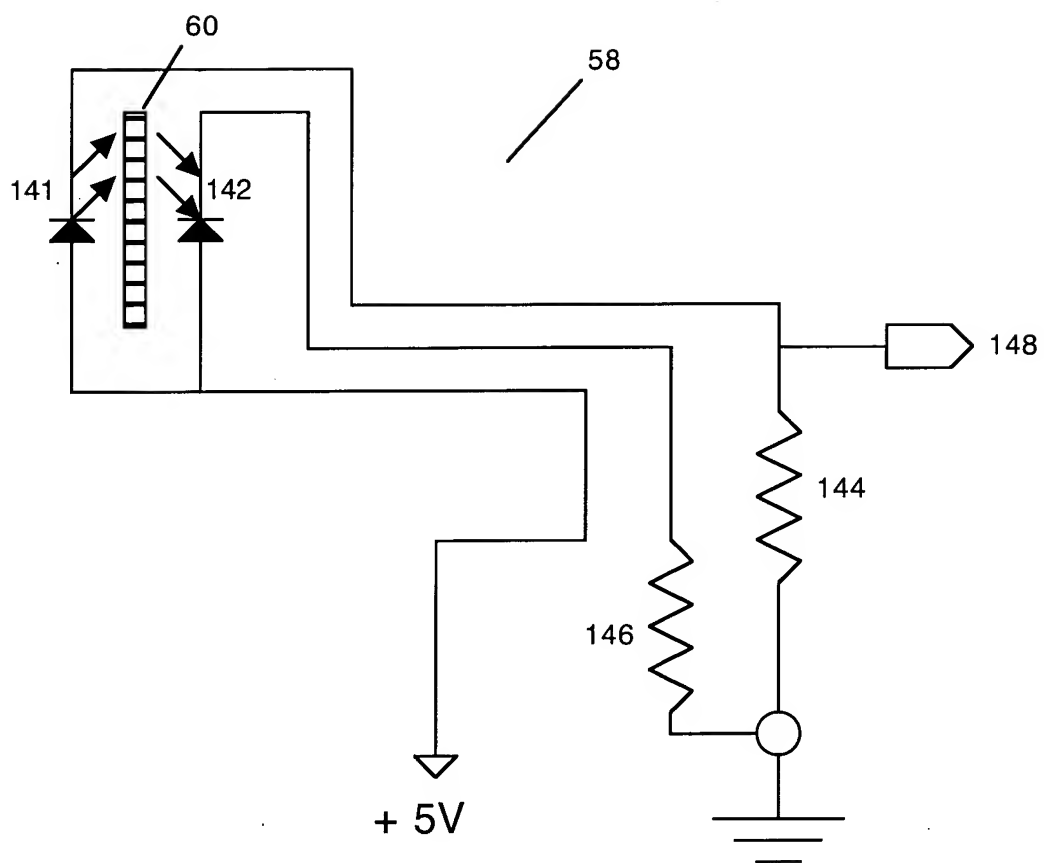


Fig.7A

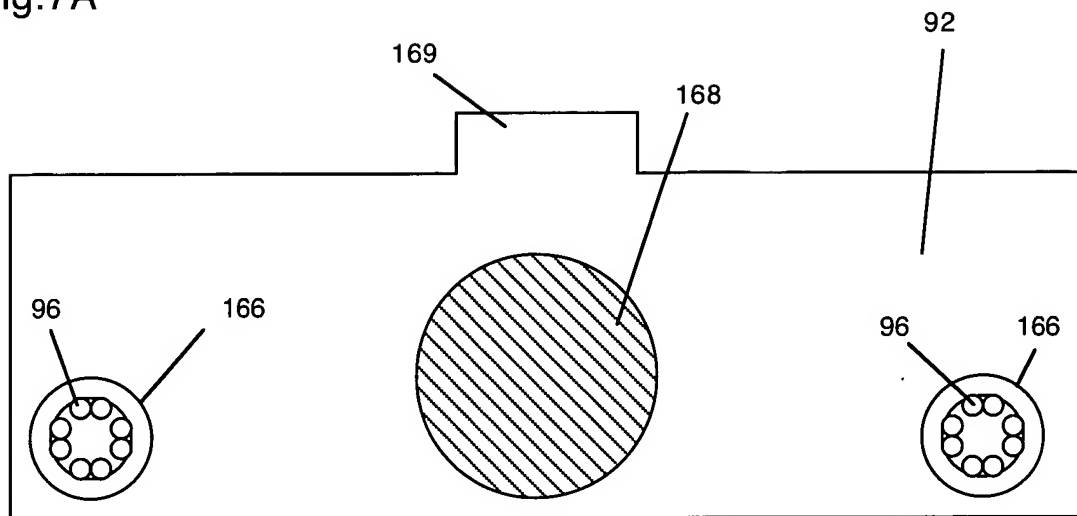




Fig. 7B

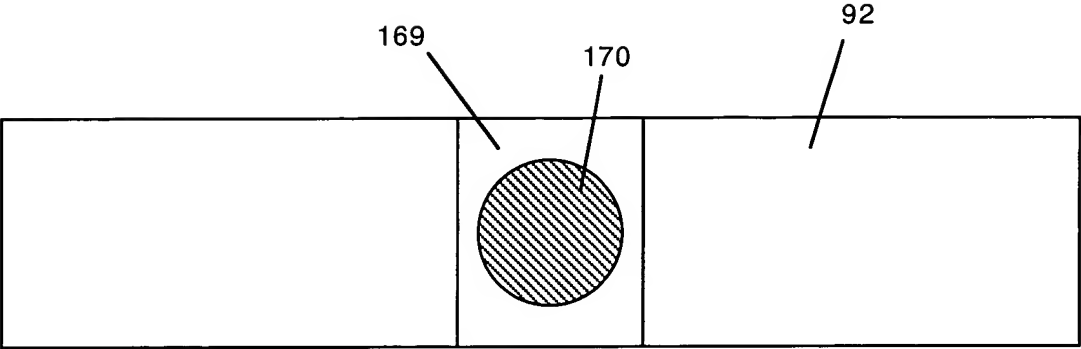


Fig. 7C

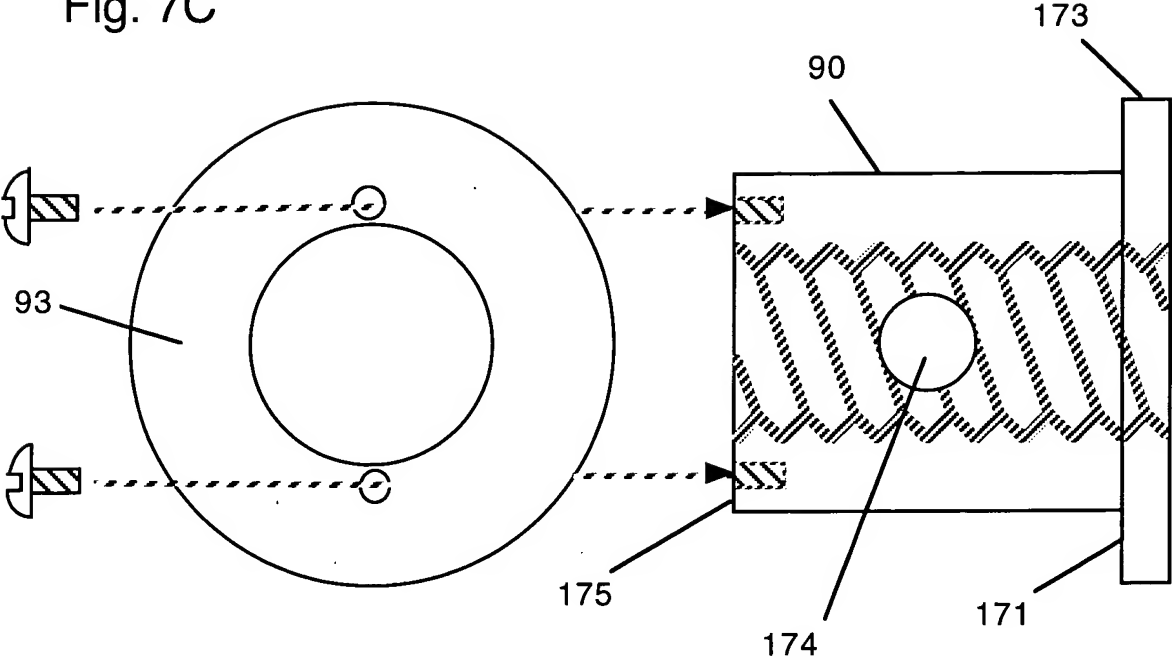


Fig. 7D

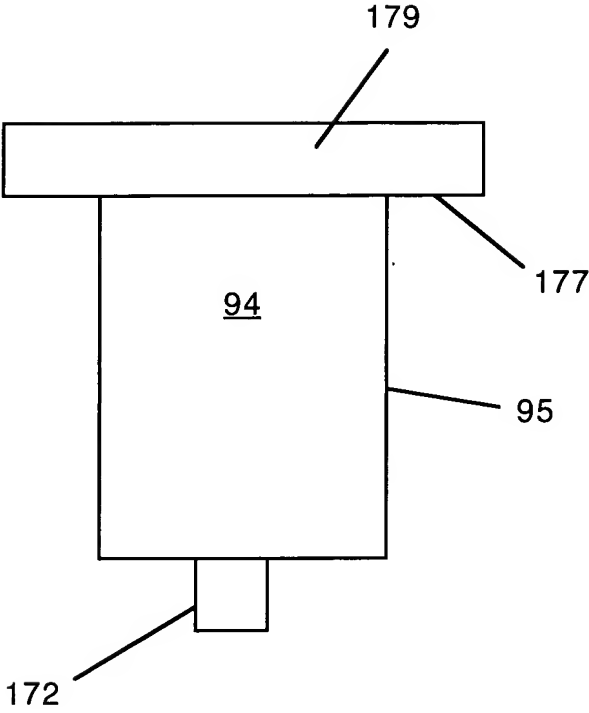


Fig. 7E

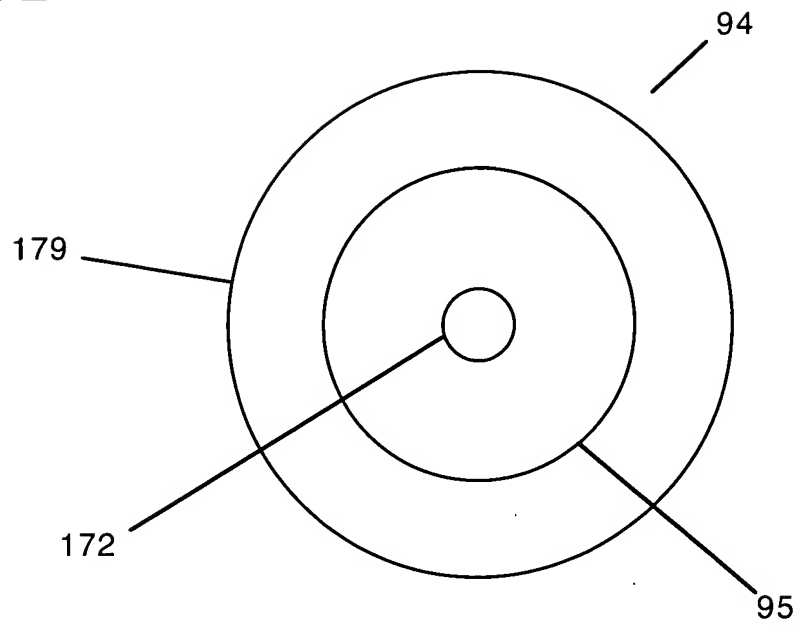


Fig. 8A

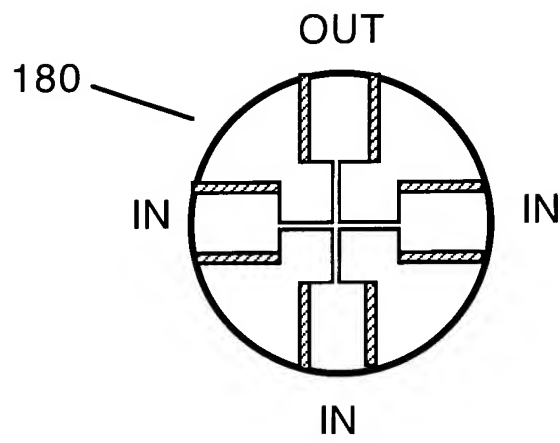


Fig. 8B

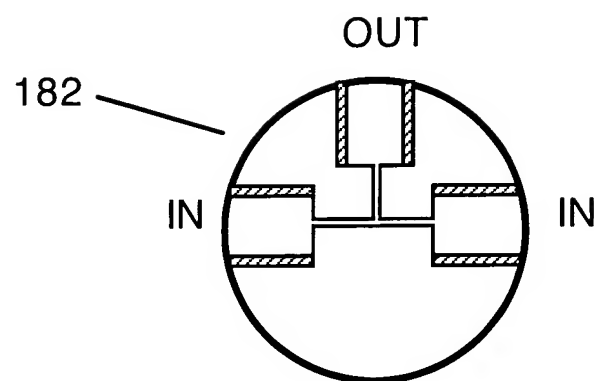


Fig. 8C

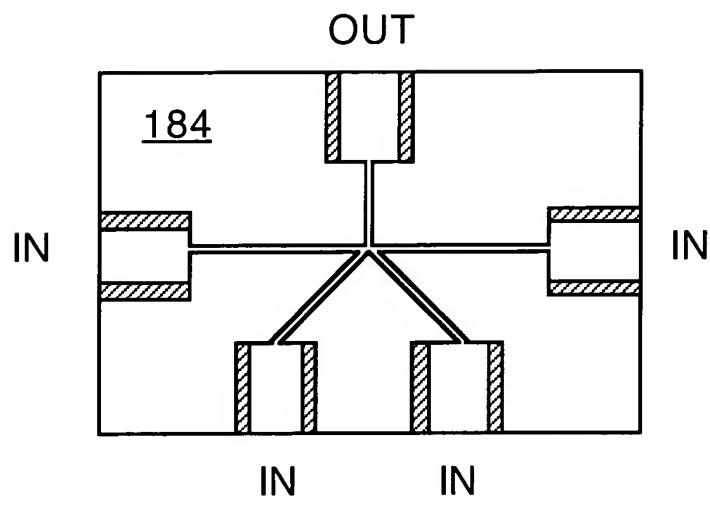


Fig. 8D

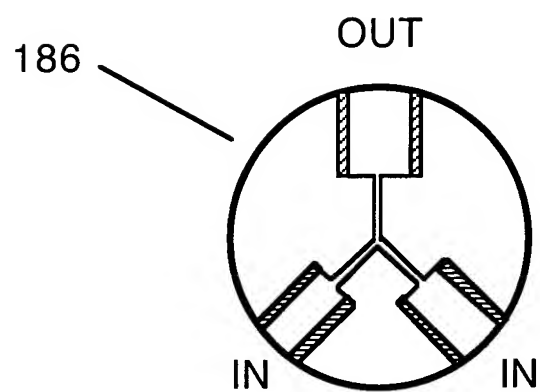




Fig. 8E

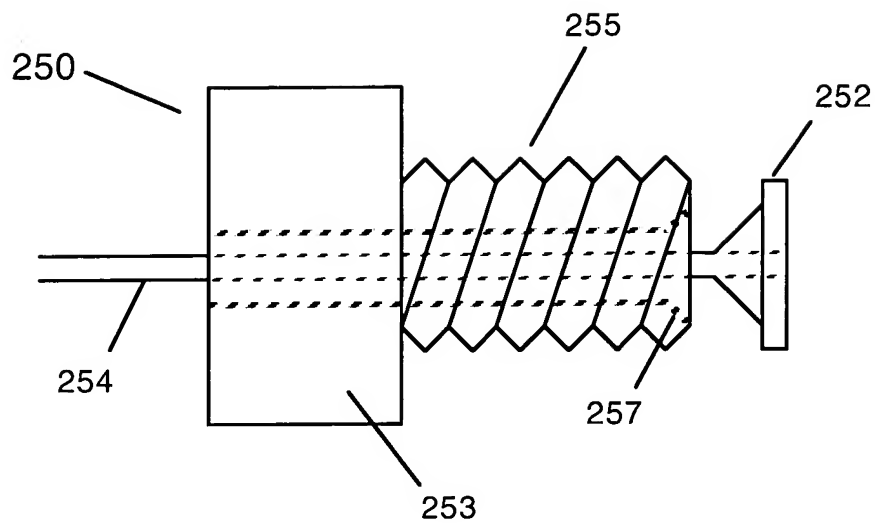




Fig. 9B

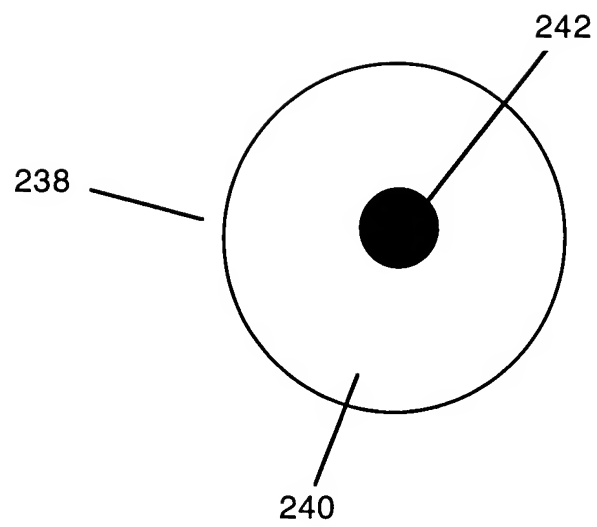


Fig. 9C

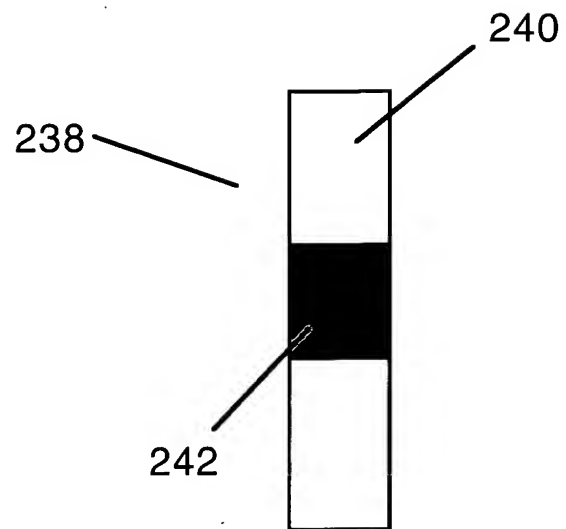


Fig. 9D

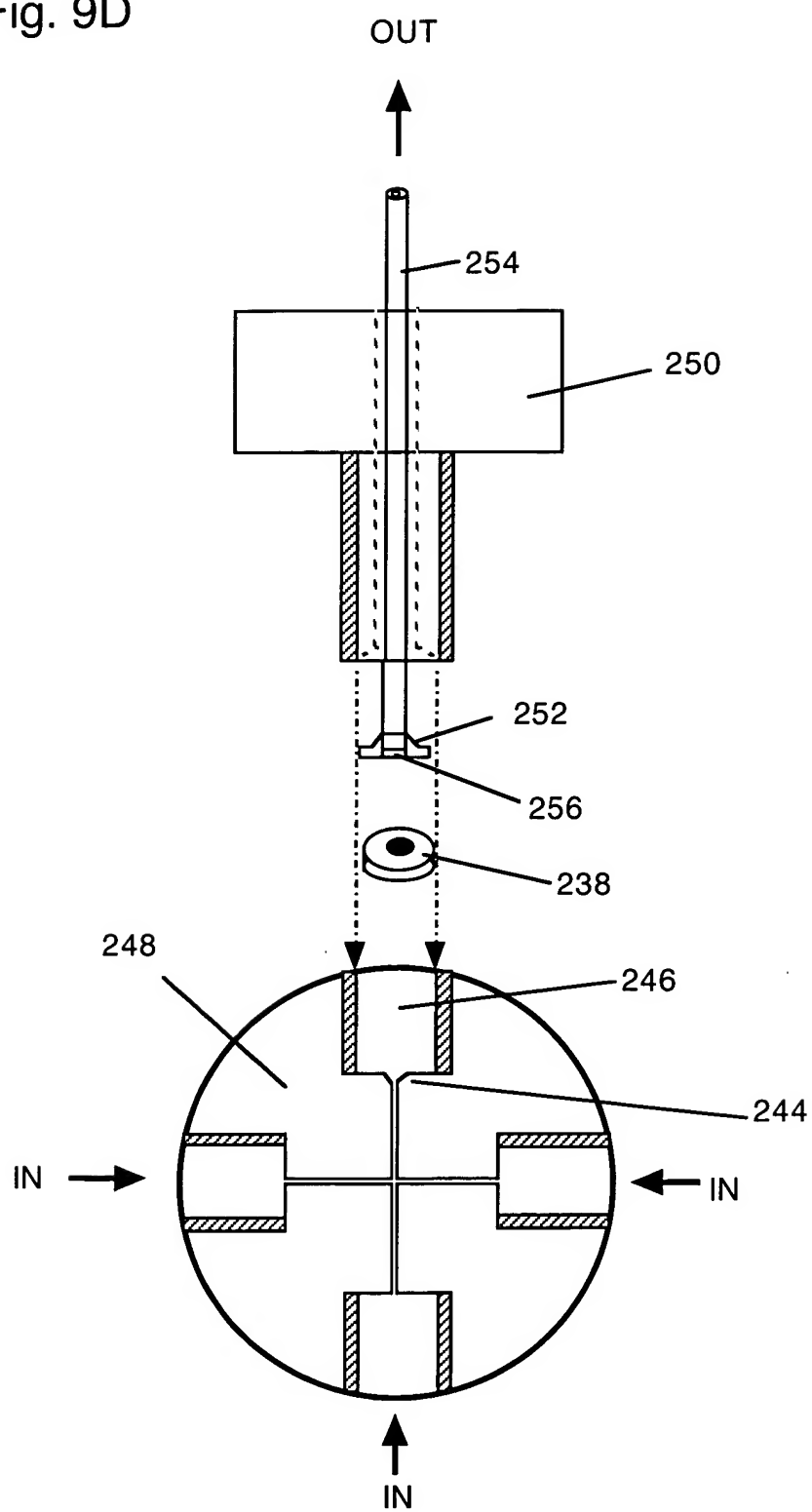


Fig. 10

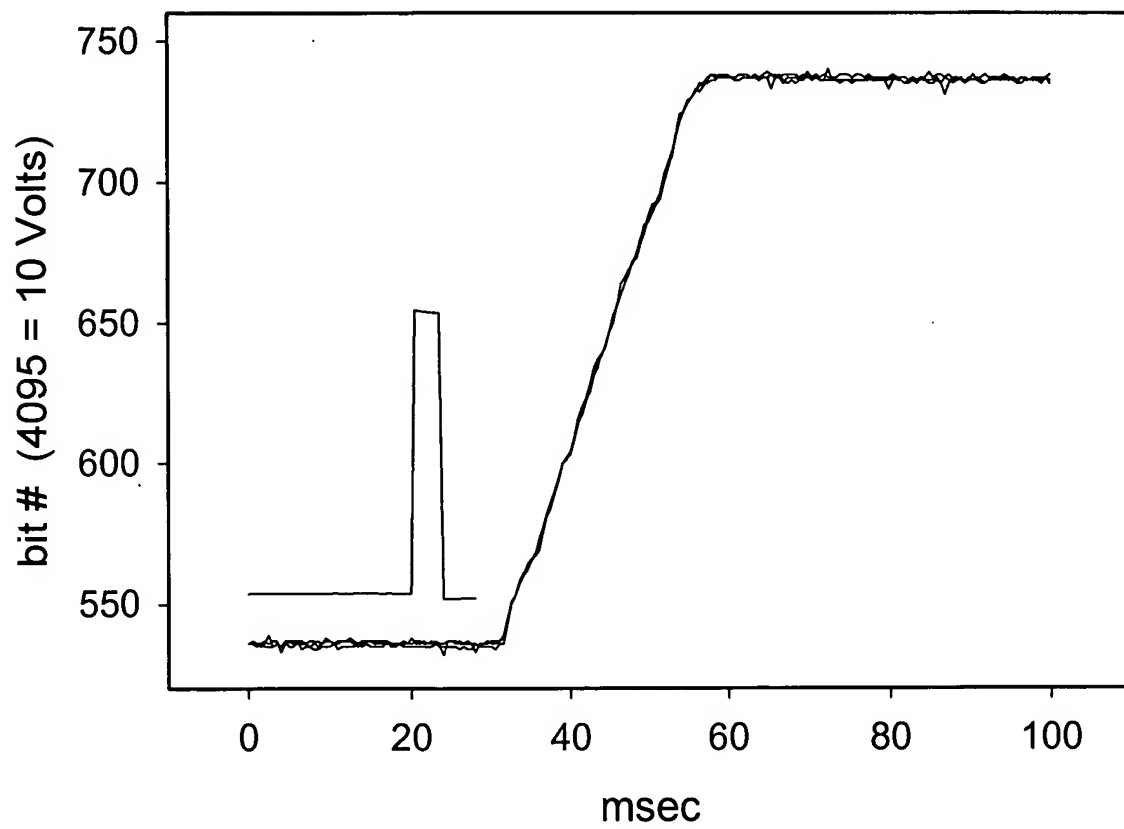


Fig. 11

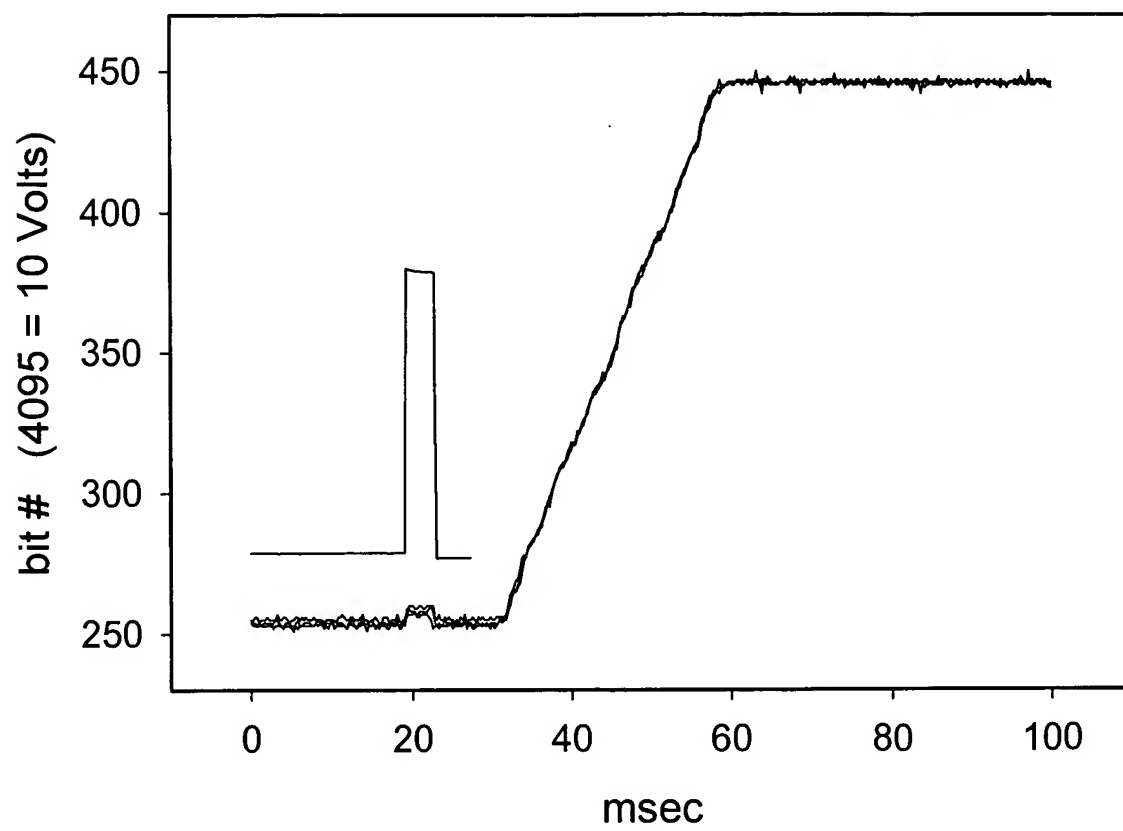
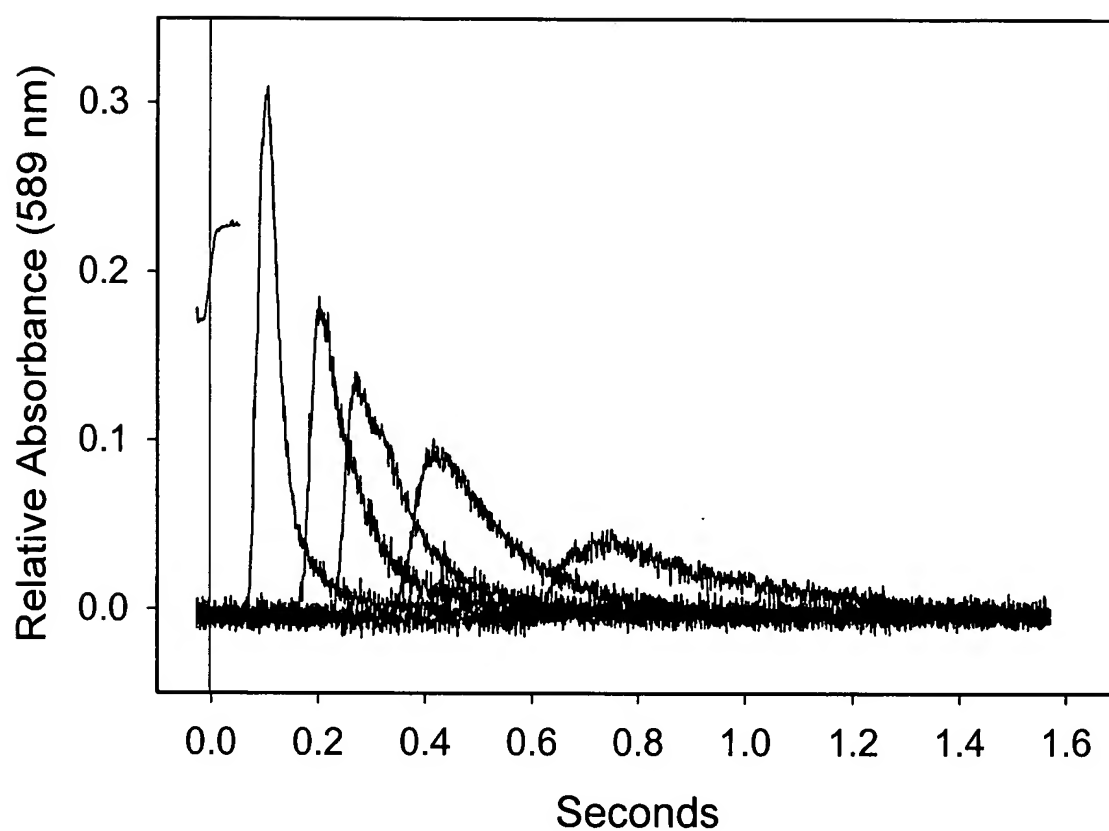


Fig. 12

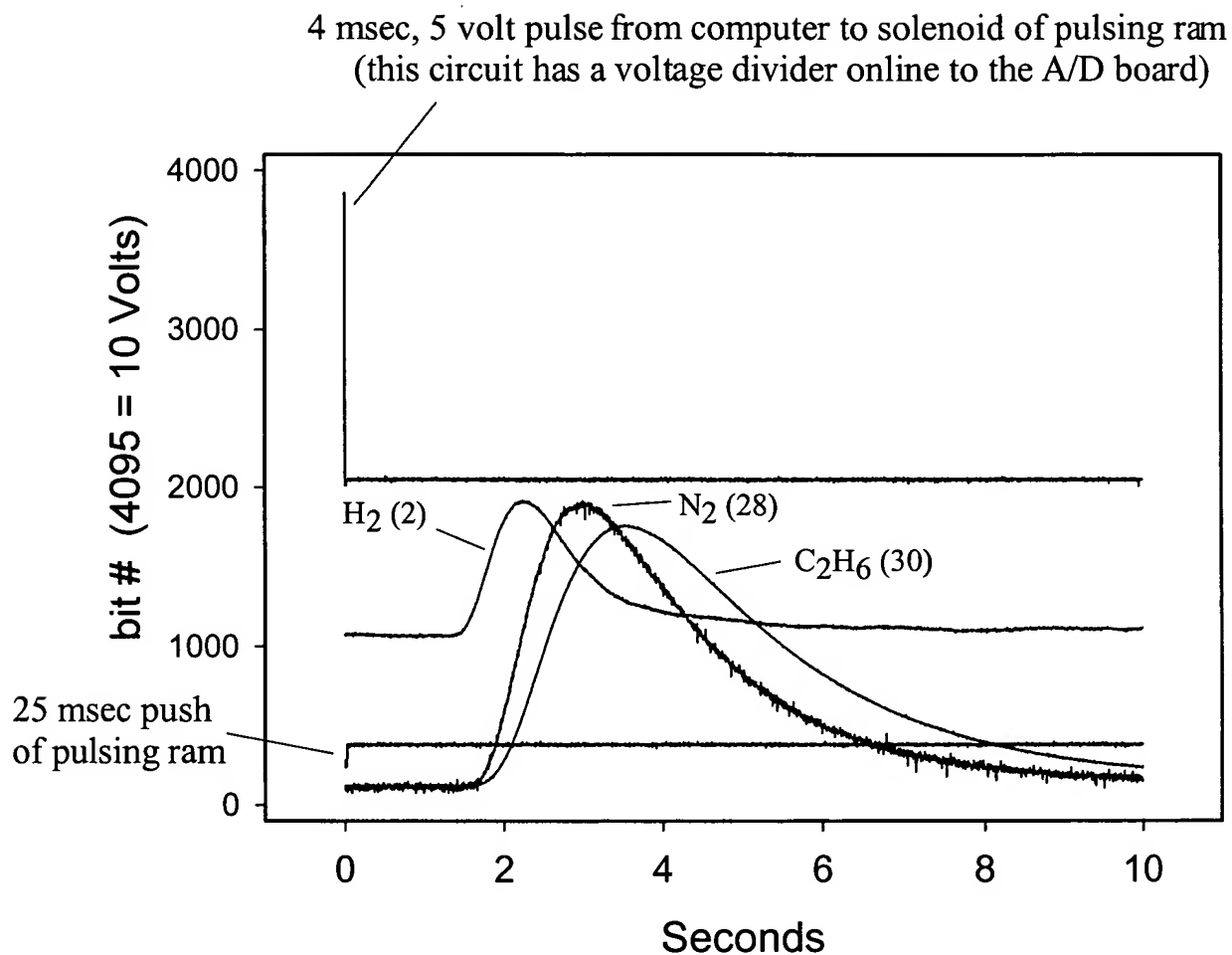


Conditions:

- 1) Continuous laminar flow of carrier stream, Reynolds number ( $Re$ ) = 821.
- 2) 0.025 second pulse injection of dye, centered at time zero.
- 3) Dye is bromophenol blue +  $HCO_3^-$  in water.
- 4) Reaction delay lines are 0.020" (0.5 mm) i.d., and of variable lengths.



Fig. 13



Conditions:

Enzyme syringe: H<sub>2</sub>O equilibrated (vol/vol) with 93% N<sub>2</sub>, 5% H<sub>2</sub>, 2% C<sub>2</sub>H<sub>6</sub>.

Total pressure = 3.7 atm.

Substrate syringe: Omitted.

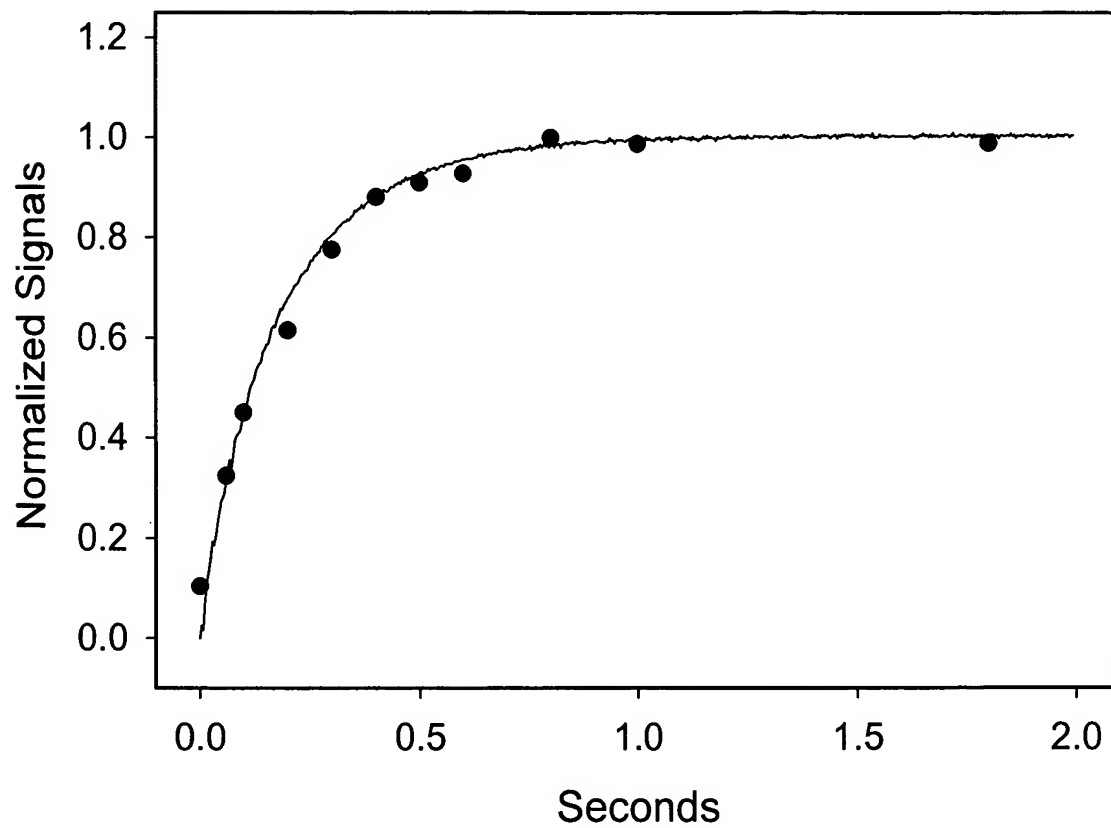
Carrier: Argon-sparged H<sub>2</sub>O. (No check valve in system.)

Reaction delay line: 2 meters long, 1.7 sec long, 0.022 inch i.d., 1/16 inch o.d., nylon.

Monitoring Five Channels Concurrently:

- 1) Mass 2 (H<sub>2</sub>) at 5 msec intervals.
- 2) Mass 28 (N<sub>2</sub>) at 5 msec intervals.
- 3) Mass 30 (C<sub>2</sub>H<sub>6</sub>) at 5 msec intervals.
- 4) Computer output pulse to relay of ram at 1 msec intervals.
- 5) Ram displacement (output of linear potentiometer) at 1 msec intervals.

Fig. 14



●  $\text{CO}_2$  monitored by push-pause-push membrane inlet mass spectrometry.

—  $\text{H}^+$  by stopped-flow spectrophotometry. Monitoring brom cresol purple at 600 nm.



Fig. 15B

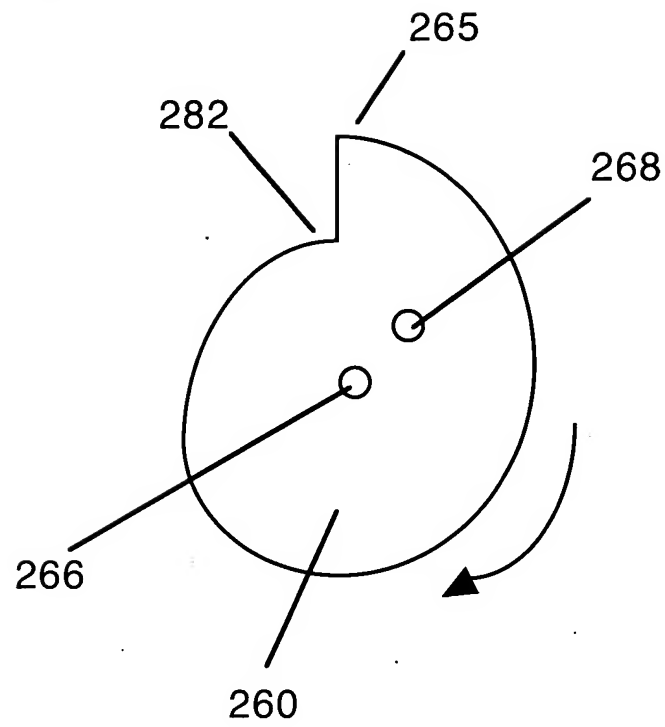


Fig. 16A

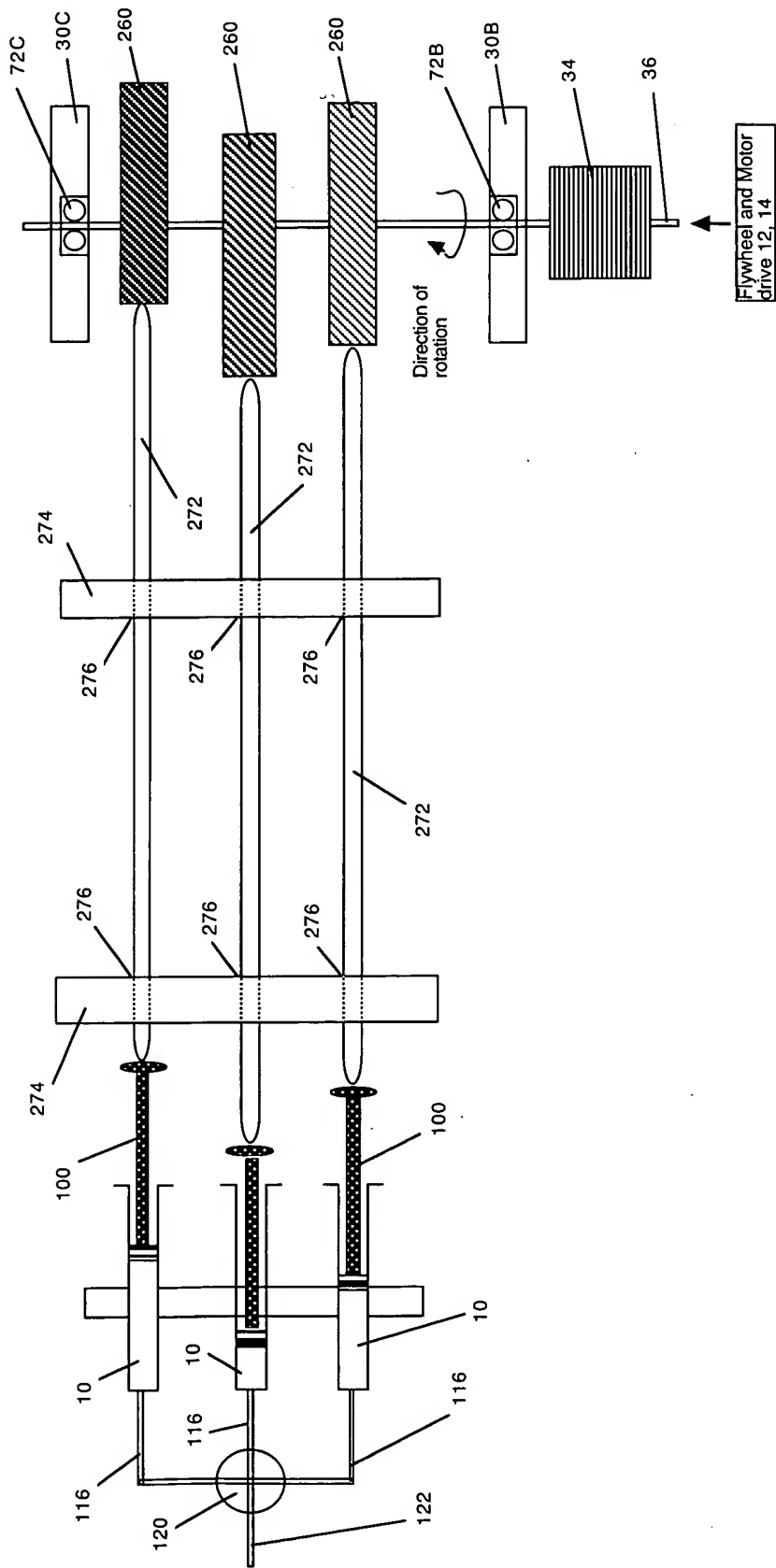


Fig. 16B

